SECOND BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA
ERTS PROJECT 110-14

November 30, 1972

A. TITLE OF INVESTIGATION: Feasibility Study for Locating Archaeological Village Sites by Satellite Remote Sensing Techniques

B. PRINCIPAL INVESTIGATOR/GSFC ID: Dr. John P. Cook/UN597

C. PROBLEMS IMPEDING INVESTIGATION:

1. Standing order data shipped considerably later than NASA anticipated (two to three months).

2. Standing order data often shipped piecemeal.

3. Construction and shipping delays have caused at least 6 week delay in availability of color-additive viewer and 3 week delay in availability of color CRT display unit to be provided by University of Alaska ERTS Project Number 1. The effect of these delays will not be serious unless availability date becomes much later than the now-projected third week in December.

4. Radio carbon dating of samples and complete soil analysis from "old fish camp" not available at this time preventing compiling of final report of ground truth study.

D. PROGRESS REPORT:

1. Accomplishments during reporting period:

a. NASA aerial photographic imagery of test site area has been inspected in detail for possible clues toward obtaining an operational signature. Aircraft data signature has not been developed because of non-availability of color-additive viewer. However, "old fish camp" and two other sites found during the ground-truth expedition were used as training areas for identification of other sites within the test area. Subsequent inspection of the aircraft imagery revealed several other possible sites within the test area.

b. Preliminary report of ground truth study has been compiled (copy enclosed). Final report awaits radio carbon dates and complete soil sample analysis.

c. Standing order and special order ERTS data has been received and examined (see image descriptors). In particular, all MSS bands of scene 1002-21315 have been subjected to first-step data analysis techniques. Although it was not anticipated that positive results

would follow from this rather crude technique, the 70 mm. positive transparencies were used to produce enlargements of the test area at approximately 20x the normal print supplied by NASA. At this enlargement, it was possible on bands 5 and 6 to see what appeared to be the training area archaeological site. The two other sites found during ground-truth work could also be identified. However, several other areas known not to be archaeological sites appeared to have the same film density. Hence, as would be expected, any representative signature will of necessity be of multi-spectral nature.

These results are quite encouraging because they raise the possibility that site identification might be possible using normal color additive techniques rather than the rather complex technique involving computer print-out of digitized MSS data described in this project's proposal.

On the basis of examination of these enlargements and an experimental set of 70x enlargements, the tentative conclusion has been reached that the grain size of the 70 mm. film is of the same order of magnitude as a single picture element image on that film. If this is true, then considerably more information exists on the tape product than is indicated on the film products.

d. An order for retrospective products including computer compatible tapes has been ordered for scene 1002-21315.

2. Plans for next reporting period:

The standing order data will be examined carefully and further retrospective products will be ordered.

Based on the results reported above, signature development will now proceed along two parallel lines of investigation. One technique will be purely photographic while the other will utilize the taped digital photometric signal.

E. SIGNIFICANT RESULTS:

(See attached sheet)

F. PUBLICATIONS:

Preliminary report on ground truth activities prepared (copy enclosed).

G. RECOMMENDATIONS:

None

H. CHANGES IN STANDING ORDER FORMS:

None

I. ERTS IMAGE DESCRIPTIONS FORMS:

Enclosed

J. DATA REQUEST FORMS:

Project 110-14 submitted a request on November 27, 1972 for retrospective data as provided for in contract.

SECOND BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA
ERTS PROJECT 100-14

November 30, 1972

PRINCIPAL INVESTIGATOR: John P. Cook

TITLE OF INVESTIGATION: Feasibility Study for Locating Archaeological Village Sites by Satellite Remote Sensing Techniques

DISCIPLINES: Archaeology

SUBDISCIPLINES: Demography, Interpretation techniques development

SUMMARY OF SIGNIFICANT RESULTS: No significant results this reporting period.

ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

NDPF USE ONLY
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N
ID

DATE November 30, 1972

PRINCIPAL INVESTIGATOR John P. Cook

GSFC UN 597

ORGANIZATION UNiversity of Alaska

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	River	Flood Plain	Alluvial Flat	
1002-21315-4	X			Scattered clouds Smoke Airfield Vegetation
1002-21315-5	X	X	X	Scattered Clouds Smoke Vegetation Airfield
1002-21315-6	X	X	X	Fire damage Fire Smoke Vegetation Tributary
1002-21315-7	X	X	X	Fire damage Tributary

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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GSFC 37-2 (7/72)